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ABSTRACT

The relationship to first grade ability and achievement levels of children with day-care attendance for as long as five years prior to entry into the first grade was studied. In particular, the study was concerned with the potentially harmful effects of prolonged program attendance itself as a form of maternal separation rather than with speed and efficiency of development as a result of some curriculum. Children who had attended state-operated day-care programs in Czechoslovakia were chosen as the study population. Sixty children from four first grade classrooms (30 males and 30 females) were administered six tests. In addition, each child's report card total grade was recorded, and an indirect measure of the teacher-child relationship was obtained. Seven dependent variables (IQ, picture vocabulary, social information, reading, arithmetic, report card game, and teacher perceived attitudes) and seven predictors (sex, birth order, mid-parent education, maternal separation, years of attendance in day care, and teacher differences) were used in the statistical analysis. The results of the study showed that the type of day-care program experienced by these children lies below the threshhold of harmful effects on first grade general ability and achievement measures. Certain of the child's own characteristics, as well as parents' education and first-grade teacher influences, appeared to be relatively more effective in predicting the outcome measures than were maternal separation and day-care attendance as characterized in this study. (DB)

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EXTENDED DAY-CARE ATTENDANCE AND FIRST GRADE SCHOOL PERFORMANCE

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EXTENDED DAY-CARE ATTENDANCE AND FIRST GRADE SCHOOL PERFORMANCE[1]

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This study was designed to examine the effects of prolonged day-care attendance on measures of first grade ability and achievement. The focus of this report, however, is not on the facilitative effects of compensatory intervention but on the potentially unfavorable results accruing from maternal separation because of the child's day-care program attendance. Length of day-care attendance is analysed here in the context of other child characteristics, home environmental features and first grade teacher differences as potential predictors of first grade ability and performance.

The wide-spread interest in and increasing demand for day-care services is motivated by several factors in our society. Sheer economic necessity for families close to the poverty level demands that both parents seek employment, while the growing phenomenon of "parents without partners" as well as the swelling ranks of liberated women also lend impetus to society's requirements to provide child care for working parents. In addition to the immediate societal benefits, day-care centers are also called upon to foster improved academic readiness in the lives of their young clientele, as has been the aspiration of Project Head Start. Yet the benefits, if any, derived from academic pre-school experiences for children cannot be directly extrapolated downward to children younger than the Head Start population without some consideration for the potentially negative effects resulting from the child's maternal and familial separation.

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Previous research suggests the basis for such maternal separation effects. Bowlby's (1951) comprehensive review of the literature up until that time has provided a groundwork for much of the research that followed him. While Bowlby characterized the potentially pathological consequences of familial separation arising out of the trauma surrounding wartime or hospitalization, Yarrow (1964) emphasized the highly differentiated nature of the circumstances surrounding maternal deprivation. Yarrow suggests that studies of maternal deprivation must discriminate between the duration and repetition of the separation, and the general trauma consequent to the separation. In these terms, day-care must be seen as a milder form of separation compared to permanent residential care, repeated changes in foster parents, or separation due to death or prolonged sickness in the family. Yarrow's review, on the whole, suggests that personality and social adjustment problems are more frequent in children who have experienced permanent residential care rather than brief, temporary separation from the home, and relatively more frequent in those who experienced separation in the first year or two of life. The emphasis in Yarrow's review is primarily on emotional effects rather than intellectual or academic effects arising from home separation.

In a more recent study Moyles and Wolins (1971) examined the relationship of group care to intellectual development across several different cultures. They compared scores on the Raven's Progressive Matrices between groups of home-reared and institutionally raised teenaged children in Israel, Austria, Poland and Yugoslavia. In general they detected no relationship between length of stay in the institution and intellectual level, although it is not clear whether any of their subjects had entered the institutions prior to two years of age.

Langmeier and Matějček (1970) provide a valuable perspective on the effects of early group care by integrating their studies of familial and

and maternal separation in Czech institutions with the theoretical orientation of western research. They postulate that an intimate, stable relationship between the infant and an adult serves as an "inner organizer" in the emotional development of the child. Under conditions disrupting this relationship children vary in their reactions according to their individual sensitivity and tolerance, their age at separation, health conditions, and the nature of the relationships to adults prior to and after the separation. They note that children brought up since infancy in collective group care situations tend to be less "collective" and more antisocial later on in their emotional adjustment. They provide further cross-sectional evidence from six-year-old children that those who had spent successively more years in institutional care demonstrated a trend toward lower IQ scores.

In a survey of the effects of nursery school and day-care experience, Swift (1964) outlined a number of factors in the pre-school environment which influence the child's adjustment including the type of program, the physical setting, teacher-child relationships, peer group relationships and the individual child's personality type. Her review of the literature concerned mainly the immediate effects of the pre-school experience on the child's emotional adjustment rather than the later effects on academic performance. In general, she concluded that a professionally adequate program conducted for the child who is developmentally ready to withstand some daily separation from the mother need not have deleterious effects on the child's adjustment, however, she does stress the importance of the child's individual differences in being able to cope with the pre-school separation. The quandry, however, lies in the fact that the child most in need of developing self-assurance and security in the group as he grows older is the child least likely to profit from the conditions of maternal separation.

In summary, the research thus far indicates the real basis for harmful effects due to maternal separation, however, the salience of the separation on the child's emotional or intellectual development may be restricted to certain threshold effects. Specifically, these threshold dimensions seem to indicate: 1) Greater sensitivity to separation between the ages of 6 months and 3 years; 2) Greater sensitivity in permanent residential situations than in day-care situations; and 3) More deleterious effects where there is other life trauma concurrent with the separation than when no aggrevating external circumstances are present. In this context the typical day-care program constitutes a milder form of maternal separation in as much as the child maintains daily contact with the home, and there are usually no severe environmental circumstances pursuant to the day-care attendance. However, the age span of children attending day-care programs may well range downward from three years. The result of day-care attendance on intellectual development or later academic performance must as yet be considered inconclusive.

The current study, then, seeks to determine the relationship to first grade ability and achievement levels of children with day-care attendance for as long as five years prior to entry into the first grade. A brief word of clarification may be appropriate, however, to distinguish the context of this study from the more familiar evaluations of Head Start or other pre-school program effects on later school performance. The primary aim of these latter studies is typically to determine the efficacy of one or more compensatory intervention curricula in off-setting the academic disadvantage often experienced by children in the lower socio-economic class. Outcome measures are usually stated in terms of IQ or some school achievement measures. The current study, however, is not directly concerned with speed and efficiency of development as a result of some curriculum, but with the potentially harmful effects of prolonged program attendance itself as a form of maternal separation.

Thus, any facilitative effects from an academically oriented pre-school program would confound the influences of home separation per se. For this reason a pre-school population was sought which experienced sustained day-care attendance, longer than the typical Head Start tenure, and yet was free from academically oriented curricula. The day-care system found in Czechoslovakia adequately fulfilled this criterion and other research requirements.

The state-operated day-care system of Czechoslovakia has been widely implemented for many years. In 1970 about 42% of the pre-school population between the ages of three and six years old attended day-care programs, while roughly 15% of the children under three years of age attended similar programs. These children come from families more representative of the general population than is true of the Head Start children in the United States. While the day-care program is not academically focused, it is designed to offer a healthful, well-rounded program of activities for the child's general physical and mental development, emotional well-being, moral training, esthetic appreciation and work attitudes (Bartušková, et. al., 1968). The uniform training of the care-takers and the uniformity of program emphasis lend a much higher degree of homogeneity to the day-care centers throughout the country than would be found in the United States. The system includes wide-spread facilities for the care of young infants, although recent legislation has made it possible for mothers to remain away from their jobs with partial pay for as long as six months after a child's birth. Aside from these features of the day-care system, the first grade curriculum is also quite homogeneous throughout the country. The same textbooks are used by all students along a uniformly prescribed course of study. For these various reasons the

preschool and elementary school environment in Czechoslovakia was much better suited to the purposes of this study than was the case in the United States.

METHOD

SUBJECTS. The subjects included in this study were selected from four first grade classrooms in two schools of an industrial city in Czechoslovakia. Sixty subjects, equally divided by sex, were selected to represent an approximately even distribution across the four classes. In an attempt to assess the representativeness of the classrooms on the predictor variables, discussed in the next section, a one-way analysis of variance was performed across the four classrooms on a number of these variables. No systematic distribution was detected for IQ ($F=.836$, $p \leq .48$), years of day-care attendance ($F=.672$, $p \leq .57$), level of parents' education ($F=1.40$, $p \leq .25$), or birth order of the child ($F=.383$, $p \leq .76$). Furthermore, no significant correlations were detected between years of day-care and parents' education ($r= .10$), day-care and birth order ($r=-.002$), or day-care and IQ ($r=-.06$). The mean IQ of the sample was 116.4, SD=19.5. The mean number of years of day-care was 2.4 SD=2.2. From this evidence we cannot reject the hypothesis that the groups from the classrooms are essentially similar with respect to IQ, parents' level of education, children's years of day-care experience, and birth order. Also, we cannot reject the hypothesis that there is no relationship between years of day-care attendance and parents' education, IQ or birth order.

MEASURES. The dependent variables were derived from a battery of six tests given to each subject. In addition two measures were obtained from the teacher. IQ was determined by a Czech adaptation of the 1937 Stanford Binet. Picture vocabulary was measured by a Czech adaptation of the Peabody Pictures Vocabulary Test. A measure of social information developed in Czechoslovakia was also administered. Reading comprehension and arithmetic achievement were measured by adapting portions of the California Achievement test. One final test was administered in an attempt to assess the child's attitudes toward school, learning, his friends and the teacher, however, a preliminary analysis of these test results indicated that the test was too sensitive to tester bias, social desirability bias and possibly position responding to be considered for further analysis. In addition to the pupil test battery the child's report card total grade was recorded. Also, as an indirect measure of teacher-child relationships, the teachers were asked to respond to the attitudes test according to how they felt the child had responded. This measure, when scored in the positive direction, was interpreted as the teacher's perception of the child's success in adjusting to the overall school situation. The analysis proceeded, then, with these seven dependent variables.

The independent variables, or predictors, were derived from the parent questionnaire. These included sex of the child, birth order, mid-parent education level, mother's absence during the first three years of the child's life, age of the child when the mother began employment, the years of day-care attendance, and first grade teacher (considered jointly as dummy variables in the regression analysis).

Mid-parent education was derived from the average parents' education on a five point scale ranging from the basic nine-year school through various intermediate levels to completion of university training. Mother's absence, or separation, was recorded on a four-point scale defined as follows: 1 = no absence during the first three years of the child's life; 2 = absence of less than one month; 3 = absence between one and three months; and 4 = absence greater than three months during the first three years of the child's life. The child's age when the mother began employment, i.e. "work-age", was included and removed jointly with the maternal separation variable in the regression equations. Where "maternal separation" is listed in the results tables, it refers to the joint effect of "maternal separation" and "work-age". These predictors represent the generic areas of child-level influences, home background influences, day-care program influences, and first grade teacher influences. In summary, the analytic variables are indicated in table 1.

Table 1.

List of dependent variables and predictors analyzed in the study.

Predictors	Dependent Variables
Child-level:	First grade ability:
Sex	IQ
Birth order	Picture vocabulary
Home background:	Social information
Mid-parent education	First grade school performance:
Maternal separation	Reading
Day-care experience:	Arithmetic
Years of attendance	Report card game
First grade experience:	Teacher-perceived attitudes
Teacher differences	

ANALYTIC PLAN. The goal of this study, broadly conceived, was to assess the relative salience of the range of predictors indicated above on the first grade measures. While the predictor of primary interest was the years of day-care attendance, the outcome of this variable alone may not be adequately evaluated without considering the broader context of influences in the child's life. For this purpose a multiple regression analysis was employed using the technique discussed by Mood (1971) and Wisler (1969) to partition the total variance accounted for into those segments uniquely attributable to each of the predictors independent of the effects of all other predictors and their commonalities in the regression equation.[2] The interactions between the various predictors were not of specific interest in this study, thus, the commonalities between the predictors were not separately partitioned out of the total variance accounted for. The sum of the unique partitions of variance reported in the results is, for each of the dependent measures, less than the total variance accounted for. The discrepancy between the sum of the unique variances and the total variance accounted for reflects the sum of the variance attributable to the interactions between the predictors.

An F-test for the significance of the unique partitions of variance may be expressed as follows in terms of the partial coefficients of determination:

For the unique variance of predictor (a)--

$$F = \frac{(R^2_{Y.abcdef} - R^2_{Y.bcdef}) \; / \; (w-w')}{(1 - R^2_{Y.abcdef}) \; / \; (N-w)}$$

where the lower-case letters indicate the inclusion of the various predictors in the equation (six predictors in this case representing the six predictors

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[2] The author is grateful for the assistance of Don Muse in recommending this technique of analysis.

outlined in Table 1), where (Y) represents a dependent variable, and where (w) represents the sum of the degrees of freedom of the included predictors. Note that (w') represents the sum of degrees of freedom for the partial coefficient of determination which omits inclusion of the (a) predictor. Similar F ratios can be computed for the other predictors by uniquely excluding them from the computation of the second coefficient in the numerator and adjusting the (w') degrees of freedom accordingly.

RESULTS

The results from the primary analysis are indicated in table 2. The proportion of unique variance attributable to each of the predictors is indicated for the seven dependent variables identified in table 1, together with the sum of the unique variances and the total variance accounted for in the case of each dependent variable. The unique partitions of variance for each of the predictors are derived by computing the numerator in the above equation and disregarding division by the degrees of freedom in the case of each of the dependent variables (Y).

Due to test scheduling problems, not all subjects received the complete battery of tests. Where missing data were encountered for a subject on any one of the variables, that subject's data were ignored on all other variables. This conservative procedure insured that the multiple regression computations were based on the same sample of subjects for all predictor variables on any given dependent measure.

The percentage figures indicated below each proportion of unique variance express, for each predictor, its contribution to the sum of unique variances. Thus, while the specific proportions of variance for a predictor may not be compared across the columns because the total variance accounted for differs for each dependent variable, the percentage of unique variance accounted for by a predictor may be compared across

several columns as an indication of its relative salience to the various dependent variables. For example, the specific proportions of variance accounted for by mid-parent education on each of the dependent variables is not directly comparable because the total variance accounted for is different for each of the dependent variables. However, an inpsection of the percentage figures in table 2 indicates that mid-parent education is relatively much more important in predicting teacher grades than in predicting reading.

The F statistics computed for each unique partition of variance are reported in table 3, together with their appropriate degrees of freedom. A cursory inspection of table 3 reveals that the "maternal separation" and "years of day-care" variables defined above account for very little difference on any of the first grade measures. Mid-parent education seems to have very high predictive power in relation to both teacher grades and the teacher-perceived attitudes of the child, but not in relation to the child's achievement level. In addition, the most salient factor in relation to reading achievement seems to be first grade teacher differences rather than day-care attendance or home background differences. Also, the child's birth order demonstrates a surprising relationship to both achievement measures. The positive correlation of birth order with achievement (reported in table 6) suggests that the later-born children score higher on the achievement tests. However, the significant predictive relationship of birth order to IQ suggests that these effects may be confounded with the child's general ability.

In an attempt to disambiguate the relationship between the predictors and dependent variables with whatever relationship they may mutually share with general ability level, the role of IQ was shifted from dependent variable to predictor for a second series of analyses. The results of this analysis are reported in table 4 in the same style as table 2 with only the school per-

formance measures serving as dependent variables. This secondary analysis allows us to examine the unique proportions of variance accounted for by each of the predictors independent from the effects of IQ. Table 5 displays the appropriate F ratios.

An inspection of tables 4 and 5 indicates that the lack of predictive power of the maternal separation and day-care attendance variables remains unchanged. Similarly, the pattern of mid-parent education in predicting grades but not achievement also remains intact regardless of IQ differences. When individual IQ differences are controlled, the child's birth order still demonstrates a significant predictive relationship to reading achievement, as well as an independent relationship with grades. Once again, teacher differences appear more relevant to determining reading differences than home background or day-care attendance experiences, as well as to determining arithmetic differences with individual differences on IQ are controlled.

DISCUSSION

The results of this study relative to maternal separation and prolonged day-care attendance are quite consistent regardless of the ability or achievement variable considered. In no case did either of these variables demonstrate a strong relationship to the measures of ability or school performance. Relative to some of the positive findings from the research on compensatory preschool intervention in the United States, it may be concluded that the preschool experience produced no positive results in IQ or school achievement measures. However, in the absence of a specific academic training component in the Czech day-care programs, these results may be interpreted to mean that the maternal separation pursuant to attendance in a day-care program need not necessarily have a deleterious effect on later school performance. Once again, it should be noted that the nature of the separation due to day-care

attendance lies toward the more lenient extreme of the separation phenomena studied in previous research. The children maintained daily contact with the home environment, and no external traumatic circumstances such as war, prolonged sickness or grinding poverty were experienced concurrently with the separation. In spite of the length of day-care attendance, up to five years for some of the subjects, we may conclude that the type of day-care program experienced by these children lies below the threshhold of harmful effects on first grade general ability and achievement measures.

Certain of the child's own given characteristic, as well as parents' education and first grade teacher influences seem to be relatively more salient in predicting the outcome measures than are maternal separation and day-care attendance as characterized in this study. The child's birth order demonstrates a significant predictive relationship with IQ, reading and arithmetic achievement, and when considered independent of IQ, retains a significant relationship with reading and with teacher grades. The parents' level of education strongly predicts teacher grades and teacher-perceived child attitudes of "positiveness" toward the school situation, which leads to the curious conclusion that the child's report card reflects his parents' education more than it does his own in terms of reading and arithmetic. However, when this relationship is considered jointly with the significant teacher differences on reading and arithmetic scores (independent of IQ) it may be that the child's six-year history with his parent outweighs his nine-month history with school in the first year, and that the child's own abilities and his teachers become relatively more predominant as the child progresses

through his school career. IQ does, in fact, demonstrate a significant relationship with arithmetic achievement in this first grade sample, however, the pattern of home - child - school factors influencing school achievement hypothesized here must remain speculation in the absence of a follow-up study. An alternative and equally plausible rationale relating teacher grades to home background and attained test scores would simply suggest that first grade marks are more relevant to the child's adjustment and attitudes toward the school environment, learning and authority than they are to academic performance. In this sense the child's socialization to the school situation must be seen as just as much an accomplishment as his academic achievements.

CONCLUSIONS

The implications of this study may be qualified by a number of limitations. Most obviously this study is a retrospective, cross-sectional analysis of the child's experience. One could argue that different levels of ability upon entering first grade account for the achievement differences. However, these differing ability levels, if they exist, are presumable attributable to some prior experiences in the child's history -- circumstances which are just the focus of this study. Furthermore, the teacher differences on achievement scores remained significant independent of the effects of IQ which presumably would not have been so sensitive to change during the nine months of schooling as the achievement measures.

Keeping in mind the distinction in types of separation experiences outlined by Yarrow, it must again be stated that the day-care experience characterized in this study constitutes a relatively milder form of maternal separation. Also, the focus of this study was on ability and schoool achieve-

ment rather than on the child's emotional response and adjustment to the school environment. More refined measures of the child's attitudes and emotional adjustment are needed in order comprehensively to characterize the effects of prolonged day-care attendance on later school performance.

Considering the range of predictor variables included in the limited sample, this study must be considered exploratory in nature in as much as no interactions between the unique predictors were investigated. In table 2 the small difference between the sum of unique variance and the total variance accounted for in the case of each of the seven dependent variables suggests that the interactions of the six predictors may be relatively insignificant. In table 4, however, where IQ is included as a predictor of school performance along with the other six predictors, this difference attributable to interactions is notable larger. The contrast in the size of the commonalities between tables 2 and 4 suggests that IQ may be an important moderator variable influencing the other six predictors even though its own unique variance relates directly only to arithmetic achievement. Further studies in this area should consider the interaction of IQ with other home background, preschool experience, and teacher variables.

A more pointed qualification, however, is the extent to which the results of this study can be generalized to the social context of the United States. There are certainly some points of difference. For example, the nature of the parents' influence was characterized here only by level of education, not level of income, since the variance of income in Czechoslovakia is quite smaller than in the United States. It is more frequently the case in

Czechoslovakia for the grandparents to care for the children in the home when the parents are working than is the case in the United States. While there are other cultural differences, the underlying relationships between mother and child and the basis for the child experiencing separation anxiety seem to generalize quite easily across cultures, as indicated by the Bowlby's and Yarrow's comprehensive reviews of the literature. Furthermore, the similiarities in the purposes and problems of children in day-care programs and first grade classrooms in the two countries far exceed the range of cultural differences. In this context an extrapolation of the results to the situation of non-academic day-care programs in the United States seem justified. On the whole, if there are emotional adjustment problems engendered by the child's maternal separation in a day-care program, these problems do not adversely affect the child's first grade ability of achievement levels. Other child characteristics, parental background features and first grade teacher factors appear more important in predicting these outcomes.

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TABLE 2

Proportion of Unique Variance of First Grade Ability and Achievement Measures Accounted for by Child, Parent, Preschool, and First Grade Teacher Predictors.

Predictors	Dependent Variables						
	IQ	Picture Vocabulary	Social Information	Reading	Arith-matic	Report Card Grade	Teacher-Perceived Attitudes
Sex	.0001 -%	.0852* 44.3%	.0493 20.2%	.0198 4.8%	.0582 16.8%	.0038 .9%	.0027 .-8%
Birth Order	.1099* 40.5%	.0330 17.2%	.0287 11.8%	.1084** 26.5%	.0918* 26.4%	.0556 13.8%	.0254 7.5%
Mid-Parent Education	.0690 25.4%	.0229 11.9%	.0646 26.5%	.0405 9.9%	.0625 17.9%	.2267*** 56.2%	.2101*** 62.0%
Maternal Separation	.0350 12.9%	.0334 17.4%	.0551 22.6%	.0332 8.1%	.0028 .8%	.0007 .2%	.0067 2.0%
Years of Day Care	.0349 12.9%	.0072 3.7%	.0194 8.0%	.0281 6.9%	.0004 .1%	.0103 2.6%	.0092 2.7%
First Grade Teacher	.0226 8.3%	.0105 5.5%	.0266 10.9%	.1790* 43.8%	.1326 38.0%	.1059 26.3%	.0845 25.0%
Sum of Unique Variances	.2715 100%	.1922 100%	.2437 100%	.4090 100%	.3483 100%	.4030 100%	.3386 100%
Total Variance Accounted for	.3118	.2172	.2975	.4685**	.3895*	.4597**	.4398**

Note: * $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

TABLE 3

F Statistics Indicating Significance of Child, Parent, Preschool, and First Grade Teacher Variables in Predicting First Grade Ability and Achievement Measures.

Predictors		Dependent Variables						
	df	IQ	Picture Vocabulary	Social Information	Reading	Arith-matic	Report Card Grade	Teacher-Perceived Attitudes
Sex	1,38	.006	4.14*	2.74	1.41	3.62	.27	.18
Birth Order	1,38	6.07*	1.63	1.59	7.74**	5.70*	3.92	1.72
Mid-Parent Education	1,38	3.81	1.11	3.59	2.89	3.88	15.97***	14.25***
Maternal Separation	2,38	.97	.81	1.53	1.19	.09	.03	.23
Years of Day Care	1,38	1.93	.35	1.08	2.01	.03	.73	.62
First Grade Teacher	3,38	.42	.17	.49	4.26*	2.75	2.49	1.91
Total Variance Accounted for	9,38	.46	1.17	1.84	3.72**	2.69*	3.60**	3.32**

Note: * $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

TABLE 4

Proportion of Unique Variance of First Grade Achievement Measures Accounted for by IQ, and other Child, Parent, Preschool and Teacher Predictors.

Predictors	Dependent Variables			
	Reading Achievement	Arithmetic Achievement	Report Card Grade	Teacher Perceived Attitudes
I Q	.0248 7.1%	.1207 ** 34.9%	.0034 .9%	.0004 ----%
Sex	.0233 6.7%	.0577* 16.8%	.0038 1.0%	.0027 .9%
Birth Order	.0612* 17.6%	.0233 6.7%	.0579* 15.5%	.0241 7.8%
Mid-Parent Education	.0208 6.0%	.0179 5.2%	.1904*** 51.1%	.1857*** 59.5%
Maternal Separation	.0233 6.7%	.0028 .8%	.0002 .1%	.0069' 2.2%
Years of Day Care	.0166 4.7%	.0029 8%	.0074 2.0%	.0080 2.6%
First Grade Teacher	.1782** 51.2%	.1205* 34.8%	.1093 29.4%	.0842 27.0%
Sum of Unique Variances	.3482 100%	.3458 100%	.3724 100%	.3120 100%
Total Variance Accounted For	.4933**	.5102***	.4631**	.4402**

Note: * $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

TABLE 5

F Statistics Indicating Significance of IQ, Child Preschool and Teacher Variables in Predicting First Grade Achievement Measures.

Predictors	df	Dependent Variables			
		Reading Achievement	Arithmetic Achievement	Report Card Grade	Teacher Perceived Attitudes
I Q	1,38	1.91	9.62**	.25	.03
Sex	1,38	1.79	4.60*	.28	.19
Birth Order	1,38	4.71*	1.86	4.20*	1.68
Mid-Parent Education	1,38	1.60	1.43	13.84***	12.94***
Maternal Separation	2,38	.90	.11	.01	.24
Years of Day Care	1,38	1.28	.23	.54	.56
First Grade Teacher	3,38	4.57**	3.20*	2.65	1.96
Total Variance Accounted For	9,38	4.11**	4.40***	3.64**	3.32**

Note:

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

TABLE 6

Zero-order Correlation Matrix of Child Characteristics
With First Grade Ability and Achievement

50≤ N ≤57	IQ	Picture Vocabulary	Social Information	Reading	Arith-matic	Report Card Grade	Teacher-Perceived Attitudes
IQ	----	.607**	.697**	.396**	.554**	.137	.263*
Sex 1=M 2=F	-.008	-.272*	-.118	.102	-.194	.013	.088
Birth Order	.334**	.152	.160	.353**	.350**	-.249I	-.083
Mid-Parent Education	.378**	.220	.429**	.243*	.302**	.504**	.569**
Work-Age	-.098	-.176	-.122	-.024	-.027	-.129	-.064
Length of Maternal Separation	.127	.084	.223*	.138	.014	.005	.112
Year of Day Care	-.086	.040	-.072	-.130	-.079	-.095	-.165

Note: * $p \leq .05$
** $p \leq .01$
*** $p \leq .001$